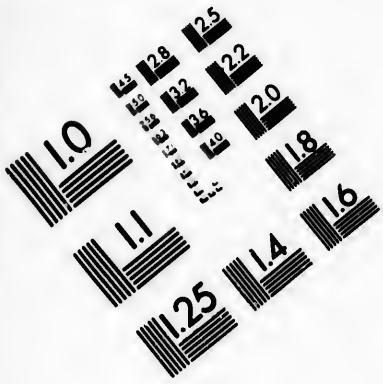

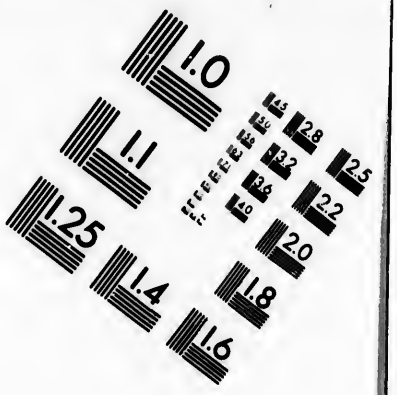

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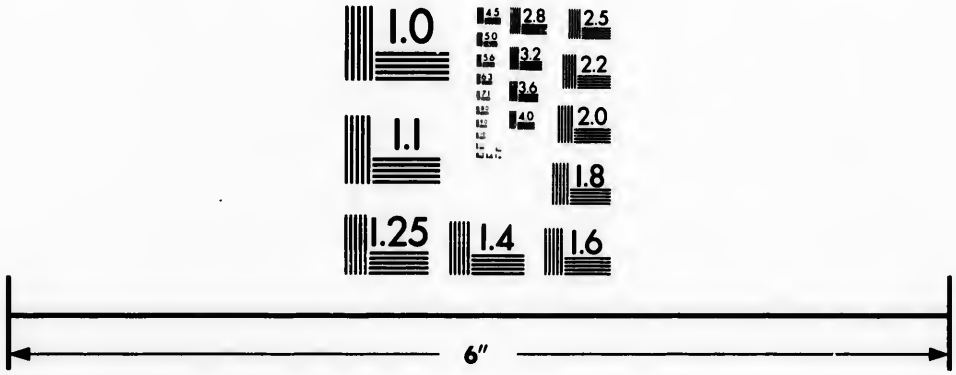

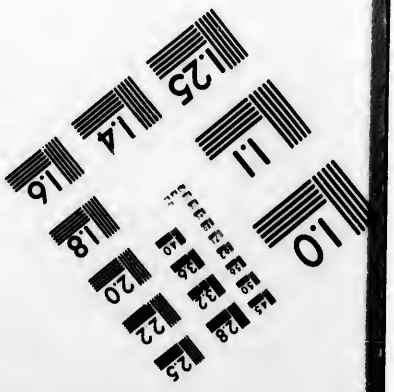

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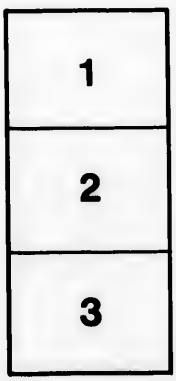

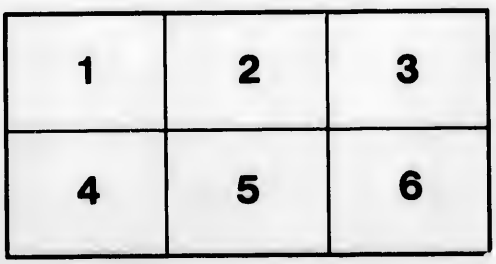

AN AID TO NATIONAL DEFENCE

BY

MAJOR-GENERAL CAMERON, C.M.

Commandant Royal Military College, Kingston

Reprinted from the University Quarterly Review

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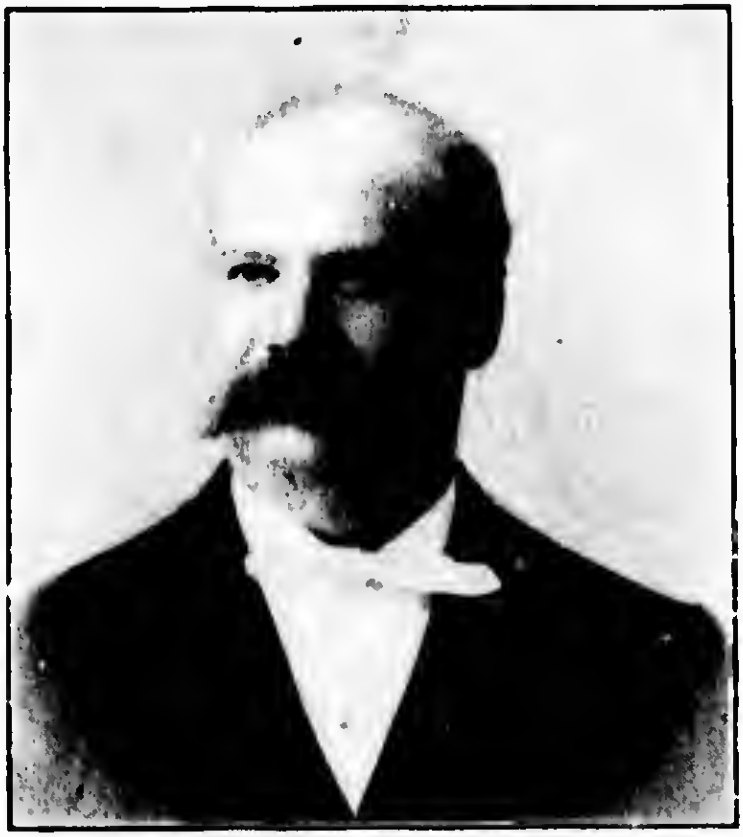
"Omnia superat Virtus."



Herbert Fairbairn Gardiner,

Hamilton, Ontario.

MESSENGER PIGEONS: A NATIONAL QUESTION.

UNTIL fifty-three years ago there was no more rapid means of conveying intelligence than was supplied by pigeons. It is only within the last half century that electricity and steam have come into competition with the messenger pigeon; and even in the present day there are innumerable conditions under which the bird is still *facile princeps*.

Prior to the development of railways and telegraphs, travelling was so slow and transportation had so many difficulties with which to contend that the training of pigeons could only be carried out by a very few individuals for short distances; and the places at which they were employed were so remote from one another as, with few exceptions, to preclude arrangement for their reciprocal connection by pigeon post.

What is known of the employment of messenger pigeons prior to the early years of the present century may be related in the words of a Reviewer in the *Royal Engineer Journal* of June, 1885.

"The employment of carrier pigeons for transmitting intelligence was known to the ancients; early navigators, when they neared their native shores, used pigeons to advise their friends of their coming home. In Greece the carrier pigeon was the messenger employed during the Olympian games. When Greece became a Roman Province, carrier pigeons served to convey to the Romans news of the gladitorial fights and of races. In Egypt, of old, the carrier pigeon post was a public institution. The African traveller, De Volney, writes on this subject: 'The state columbaries were distributed all over the country in towers specially built, and it was owing to constant communication between the several stations that public order and safety could be preserved in the extensive Syro-Egyptian Empire.'

"John Moore asserts that these oriental carrier pigeons were brought by Dutch mariners to Europe. They were called *Bagadettes* after Bagdad, and it is probable that the Belgian carrier of the present day is a descendant of the oriental bird. It is quite surprising into what a variety of services the carrier pigeon has since then been pressed. Instances of its successful employment in the interests of speculation, politics, the saving of life, public safety and war are numerous.

"In 1770, an Italian is said to have had recourse to having the winning numbers in lotteries sent him by carrier pigeons. It is a well known fact in this country (England) that the London house of Rothschild used carrier pigeons in 1815 to obtain information of the course of events on the continent, and thus was able to receive the news of the defeat of Napoleon at Waterloo three days before the English Government did, and to buy up largely English Government stock at its then depressed price, and sell at an enormous profit after the rise which took place when the news became generally known, thereby realizing an immense fortune. . . . It appears from the writings of Pliny that the Roman armies in all probability made use of carrier pigeons, otherwise the great rapidity cannot be explained with which Julius Cæsar received information of risings in Gallia, enabling him to descend the Alps with his legions at the least sign of disturbances. It is also stated that during the siege of Candia by the Venetian admiral Dandolo, at the beginning of the 13th century, the latter received important intelligence from the island (Crete) by carrier pigeons, which facilitated its conquest. The siege of Harlem by Frederick Toledo (1572), the siege of Leyden by the Spaniards (1575), the bombardment of Antwerp (1832), supplies also examples of the successful employment of the carrier pigeon post."

The foregoing sketch of pigeon service carries its history down to times when railways and telegraphs originated and began spreading into the wonderful net work they now present on maps of the civilized world. For a time the employment

of pigeons appeared to be doomed to extinction. Love of sport, however, came to the rescue, and with the assistance of railway and telegraph the systematic rearing and training of birds were carried on to an extent that had hitherto not been dreamt of, until in 1870, at the siege of Paris, a most powerful impetus was imparted to the movement, and to-day the area of the civilized world over which organized pigeon post is established, the vast flocks of birds employed, and the vital importance of the reliance placed upon them are nothing short of marvellous.

But, in Canada, where is the organization? Where are the birds? How many of its people have even heard of them?

It is the aim of this article to awaken interest in its subject, to make known what the power of the messenger pigeon is, to show what services the bird may render, and to demonstrate that to encourage, to support and to actively co-operate in developing pigeon posts throughout the Dominion are, for government and people, national duties.

Amongst the names of the numerous varieties of pigeons, *the Carrier* is perhaps most familiar to the public ear. This name is popularly misapplied to birds used to convey messages. *The Carrier*, however, is not suited to this purpose. It is essentially a fancier's show-bird—tall, erect and bold in carriage. It is specially marked by what the uninitiated might regard as warty excrescences around the eyes and above and below the beak. An excessive and regular development of these apparently abnormal growths or *wattles*, is considered by the professional fancier as an important criterion of excellence. If of perfect form and full size the wattles interfere with the birds vision in the direction of its beak. The *homing faculty*, or power to satisfy a desire to trace its way homewards is not possessed in any high degree by *Carrier* pigeons.

Birds used in messenger service are common-looking pigeons undistinguishable by sight from the ordinary house pigeon bred for the table. They cannot claim, as *Carriers* may, to be a distinct species. In olden times—pigeons being used for

comparatively short distances—many varieties were available : but, as time has passed, the principle of the survival of the fittest has been in constant operation ; and now there are classes of birds in which the homing faculty, with great powers of wing and endurance, are highly developed.

Such pigeons are known in German as *brieftaüben*—letter pigeons : in French as *voyageurs*—travellers ; and in English variously as travellers, couriers, homing and messenger pigeons.

" Homing pigeon " may be the name in most general use. It refers to the faculty which when highly developed renders the bird useful.

" Messenger pigeon " would appear to be the most appropriate name, as it implies the service to which the bird is put. The facility this bird has in directing its flight homewards has been variously accounted for. Some ascribe it to an exercise of highly developed intelligence, others to perfection of sight, and yet others to instinct or intuition. In keeping with these opinions we find that in selecting birds some people consider that the form of the head is of special importance—breadth between the eyes, and development backward from the eyes indicating large brain. Others pay more attention to the eye itself—looking to its brightness and prominence as evidence of power of vision ; and even the colour of the eye is noted by some. Again, others deem pedigree to be the only reliable guide in selection.

It might be supposed that all would agree with regard to strength being indicated by size. Yet, there are those who prefer gracefully outlined slight birds — while many prefer robust and sturdy-looking pigeons. Long tails and short tails have their admirers.

With regard to the wings there is a near approach to unanimity. Length of wing, breadth and firmness of pinion webs and perhaps the straight alignment of the wing feather-tips when the wing is fully expanded, are generally accepted as desirable conditions.

There is perfect agreement in the view that trial in flight affords the only conclusive test, and that birds which do not pass through the ordeal satisfactorily should be removed from the loft, since their inferiority may be repeated in their progeny.

With a view to ascertaining whether sight enabled the messenger pigeon to trace its way homewards, birds have been blinded before being *thrown* for flight, and they failed to find their way. On the other hand they have been able to steer a correct course through the darkness of night—and there are innumerable instances of their passing directly homewards over hundreds of miles by lines they had never previously explored. It is difficult to conceive that any development of what the five senses are understood to be, could enable a bird to accomplish what the *homer* does.

From Berlin to Paris is, roughly, 500 miles. It is authentically recorded that a French bird captured near Paris was conveyed to Berlin, kept there for four years, and then, on escaping, returned to its loft in Paris. The writer of this article purchased two birds at Toronto, eastward of which place they had never been flown. From Toronto they were conveyed to Kingston, 150 miles eastward, and there kept prisoners in a breeding cage. Through an oversight they were subsequently sent northward forty-seven miles to be flown from Sharbot Lake. Instead of returning to Kingston they went westward 150 miles direct to their old loft at Toronto. These birds had been sent from Toronto to Kingston, and thence to Sharbot Lake in a closed basket, and they had not previously seen the intervening country. Neither sight nor a combination of all five senses could have helped to guide them. There are cases without number of birds being sent in training 100, 200 and 250 miles beyond a point to which they had previously been.

Whatever the homing faculty may be, it is one which is present at a very early age and rapidly develops. It is potentially present at the bird's hatching, and needs only opportunity for development into activity. Very young birds

may be removed from the loft in which they have been hatched, domiciled in a new home, and there liberated without much risk of their deserting. Older birds cannot be so treated.

The rapid development of the homing faculty is illustrated in the following experience: "The Scamp," when a squealer three weeks old, was removed from the loft where it had been hatched in Utica, New York, to a loft in Northampton, Massachusetts. Thence it was being trained in a southwesterly direction until White Plains, New York (105 miles) was reached. From this station, instead of returning to Northampton, it made its way direct to its native loft in Utica, 153 miles north-west of White Plains. From Utica it was returned by express to Northampton and there kept a prisoner until apparently redomiciled. Presently, however, accompanied by a mate, it deserted and at noon of the same day the pair was found to have turned out the occupants of the nesting place in which the Scamp had been hatched at Utica, and to have taken possession of his old residence.

Again, in 1882, Major-General Hazen, of the United States Signal Service, and Major-General Breckinridge, of the Department of the Pacific, had their attention directed to the use of messenger pigeons for communicating between signal stations and in Indian warfare. The War Department enquiries resulted in an adverse report by Lieut. Birkhimer, based upon information, not upon experience. Mr. E. H. Conover, of Keyport, New Jersey, thereupon undertook to prove that birds could be used for distances of 150 miles "before October of the year in which they were hatched," and needed no gradual training. He tested the case with nine young birds, with one exception under five months of age on the 15th August when the experiment began, and none of them had previously been more than sixty miles from home.

The successive flights were: 100 miles from Elkton, Maryland, 15th August; 117 miles from Havre de Grace, 19th August; 183 miles from Washington, 26th August; 338 miles from Lynchburg, Virginia, 1st September.

The start from Washington was arranged under the superintendence of the United States chief signal officer. The return of the birds from this trip to Keyport was announced at New York by message bird, and the result telegraphed to Washington by noon, and received at Keyport by bird at 12.45 p.m. In the flight from Lynchburg (338 miles) the start took place at 6.10 a m. The first bird home arrived at 6.01 p.m., having flown at a rate not less than a mile in 2 min. 7.6 sec. None of the birds were lost in these journeys.

In Belgian training, after attaining fifty miles, birds are commonly sent to greater distances by successive stages of fifty, 100 and 200 miles and even more at a time. Amongst the regular long single day courses may be mentioned :—

Liège, from Toulouse	505	miles.
Ghent " Morceux	545	"
Malines (Mechlin) from Tarbes	554	"
Ghent from Bayonne	560	"
Liège " Lourdes	565	"

The distance between San Sebastian in Spain and Liège in Belgium, 615 miles, was traversed by a bird in 1862 in one day. This is probably the greatest distance which has been passed over in a single flight. Fifteen other birds thrown at the same time arrived at their loft early the following morning.

As instances of long rapid flights, may be mentioned that in 1885 a bird liberated at Abington in Virginia flew 508 miles to Brooklyn at the rate of a mile in 1 min. 42.1 sec.; and 351¼ miles between Châtellerault and Verviers were passed at the rate of one mile in 1 min. 12.87 sec.

The following are instances of rapid short flights :—

One mile in 60 seconds,	180	miles,	Paris to Moulins.
" 59.6 "	177	miles, 1665 yds.,	Dijons to Blois.
" 58.8 "	101½	"	Albert to Shaerbeck.
" 58.5 "	243	"	Cresson, Penn., to New York.
" 57 "	63	"	Quievrain to Antwerp.
" 56 "	54½	"	St. Quentin to Boussu.
" 55 "	70½	"	Noyon to Flenu.
" 50.4 "	215	"	Etampes to Louvain.
" 48 "	80	"	Arras to Antwerp.

Amongst these instances two are exceptionally noteworthy: In 1879, in the United States, the 243 miles between Cresson, Pennsylvania, and New York were passed over at the rate of 1,805 yards in a minute.

From Etampes to Louvain, 215 miles were flown at the rate of 2,095 yards in a minute.

A fair idea of the performance of a good bird may be gathered from the result of a race from Orleans to St. Nicholas, 243 miles, on 6th June, 1875. Out of 1,445 birds thrown, the 214 which accomplished the distance in the shortest time travelled at rates varying between 1,469.7 and 1,362 yards in a minute, the slowest of these being 23 minutes later than the swiftest in completing the flight.

When distances greater than can be flown in a continuous period of daylight are attempted, the rate of flying is not ascertainable, and the time occupied varies extremely. For the present Canada is not interested in these longer flights; but it may be noted that the 1,600 miles between Aix-la-Chapelle and Rome was passed in 10 days and 7½ hours. A case of 1,500 miles having been passed over in three days is somewhere mentioned.

A noted bird, Arnoux, that belonged to Mr. A. P. Baldwin, of Newark, U.S., in the course of four months in 1885 flew as follows, successively:—

Trained up to	150	miles.
Raced	130	"
"	196	"
"	272	"
"	372	"
"	535	"
"	515	"
"	1,010	"
Total	3,180	miles.

Later it was sent to Boutte, Louisiana, 1,154 miles; but, news of its return had not been received by the publisher of the paper from which these details have been taken.

It is observable that for its last finished race the bird had been sent out 475 miles beyond a point to which it had previously been sent.

Hitherto mention has been made of flights over land only; but the bird's faculty enables it to find its way home across the sea for distances but little short of those which it can accomplish over land in a single continuous flight.

There is reliable evidence of their conveying news from 320 miles, outside Sandy Hook. The United States Signal Department place the sea limit at about 500 miles. Dr. Johnson, of Keyport, one of the leading authorities on the subject in the United States, is of opinion that 450 miles may be regarded as the limit of reliance on the bird's power from seaward.

Birds of the Plainfield Club have been successfully flown from 100 miles at sea—300 miles to their loft.

The regulations of the United States Government loft at Key West Island—established for naval and military purposes—intimate that their birds are to be trained to 100 miles in their first year, an additional distance in the second year, and to 400 miles in the third and subsequent years.

In the regulations just mentioned it is noted that "successful flights have been made during storms of wind and rain, and even during the night," but, a warning is added that only tested and thoroughly reliable birds should be placed under these disadvantages.

Count de Bury, of St. Johns, New Brunswick, has flown his birds successfully through 12 miles of dense fog, and in snow storms.

On the 30th of July, 1883, 650 pigeons sent from Verviers, Belgium, to Calvi, Corsica, 560 miles, were there liberated. They passed in a direct line homeward over Monaco, where they were seen after crossing 93¼ miles of sea from Corsica. These birds, had they made for the nearest mainland to avoid the sea would have followed a N.-E. course, instead of one to the west of north which they followed.

Mr. R. Stevens, of the Plainfield Club, New Jersey, flew birds from Manassas, Virginia, about 231 miles, which returned to his loft in heavy rain and fog, having moved at a rate not less than 695 yards in a minute.

Between the Island of Maddalena—north coast of Sardinia and Rome—149 miles, all sea—communication has been kept up by pigeons in all weathers.

Naples and Cagliari, Sardinia—279½ miles across sea, are immediately connected by pigeons.

From what has been remarked, the power of the messenger pigeon to endure the fatigue of long flights, and to select its direction homewards, will readily be admitted. It is a matter of general knowledge that these birds are prolific. A pair may be counted upon to rear three pairs of young ones in the course of a year. As many as nine pairs of young ones have been reared by a single pair of birds in twelve months. The birds are hardy and need no exceptional treatment apart from training. Training is nothing more than giving them practice in the exercise of their homing faculty.

One gramme, equal to 15.432 grains or .032 oz. avoirdupois, is the weight which the French—during the siege of Paris by the Germans—considered might be carried by pigeons without affecting their flight. Two and one-quarter inches in length of large turkey quill weighs about ½ gramme. Foreign post note paper 14 sheets to 1 oz. gives about 43 square inches of writing surface to the ½-gramme. A strip of such paper 10 inches long by about $2\frac{1}{10}$ inches broad, rolled up and inserted in the quill, would form what was held to be a pigeon load.

With this low limit of carrying power the resourceful ingenuity of the French enabled them to send over one million words by a single bird at one time; and, not only this, but to despatch the news received to the persons for whom it was intended in a readable form, in a time beyond comparison shorter than that in which the work could have been accomplished had one or even several telegraph wires been available to them.

The small pictures, transparencies, which, when passed behind the lenses of a magic lantern, have their enlarged duplicates cast on a screen, are familiar to all. The effects of photographic slides used in magic lanterns are nearly as well known as those of the old coloured slides. The photographic slides are made of glass, and the pictures they bear are shadowed on a transparent, sensitive medium, covering the surface of the glass. The glass slides could not be carried by pigeons; but sensitized films of collodion, having photographic impressions on them could well be carried. The results obtained were so remarkable that a few more details of the subject may be given here. During the investment of Paris messages were received by the postal authorities in London for transmission to the beleaguered city. Certain conditions were attached to the privilege of using this channel of communication. A message might not contain intelligence affecting the war proceedings. A message was limited to twenty words. Postage at the rate of 5*d.* a word, and a registration fee of 6*d.* per message had to be prepaid.

By steps the method of conveying the messages gradually improved and finally took the following shape :

On receipt of the messages in London, they were set in type, and printed off on pages, including 200 messages each.

Assuming that correspondents took full advantage of their opportunities—each printed page included 4,000 words—upon which the charges would be:—

Postage.....	£83 6s. 8d.
Registration.....	5 os. od.
Total for each page.....	£88 6s. 8d.

The matter contained on sixteen of these pages was, by the process of microphotography, depicted upon a transparent film of collodion, measuring 2 inches by 1 inch.

Each film might consequently have had the messages upon which sixteen times £88 6s. 8d. or £1,413 6s. 8d. was payable for postage and registration ; 18 of such film's rolled together

and inserted in a quill, made up a pigeon load of one gramme, upon which £25,440 were the charges. This sum at $4.86 = £1 —is equivalent to $123,638.40 for freightage on each bird load.

Postal communication between London and Tours was not cut off during the war. Tours is about 132 miles S.W. from Paris.

Pigeons carried out of Paris in balloons, were collected at Tours. The quills with their charges of photographic films were attached to the tails of the pigeons, and by them carried into Paris. On receipt in Paris the films were opened out and spread on plate glass slides. Screens to receive enlarged pictures of the slides—through the intervention of the magic lantern—were made of sensitized material, and thus were at once obtained enlarged photographs of the matter on the micro-photographic films. The screens were then cut up into their separate messages, and these despatched to whom they were addressed.

From the figures given it may be deduced that one full pigeon load might have included 1,152,000 words. Supposing these to have been received for dispatch by telegraph from Tours, the following steps at least would have been entailed: The messages would have had to be read and checked and charged for; transferred to the transmitting clerk, and by him spelt over and transmitted; the receiving clerk would have also to spell over the whole and transcribe it, and possibly duplicating for record purposes might have been required.

Allowing an average of four letters to a word, the number conveyed from Tours to Paris in less than three hours by a pigeon would have been 4,608,000. By the telegraphic process these must have been spelt over at least twice, and thus transcribed at least once before being sent out for delivery. Against this set the photographic process by which the reading, spelling, and transcribing is effected by light, mechanism and chemicals, almost instantaneously, and one may faintly realize the economy effected in this case through the use of pigeons.

I have purposely left out of the account the type-setting element in England, for I assume that the type-setting might have been dispensed with by taking micro-photographs of the messages as they were received in manuscript. Moreover it was not always necessary in Paris to despatch the messages to addresses. In a large darkened chamber many people assembled and read on the screen the news intended for them. Copies of the *Times* were thus published in Paris, and advertisements from friends in England were readily picked out by the spectators.

On the authority of the Century Magazine, for July, 1886, the carrying power of the pigeon, under some circumstances, would appear to be much in excess of 1 gramme. The *Magazine*, relating that during the United States yacht races in September, 1885, a pigeon service was extemporized by Mr. Arnoux, states :

"The messages then sent from sea were each not less than ten pages of manifold note, and were carried upon the middle feathers of the tail, to which they were fastened by fine copper wire wound about and pressed flat, to hold the messages close to the feather. The editor of a newspaper served by these pigeons said : 'It gives me a peculiar sensation to receive copy from the hand of one I know to be out of reach upon the water, and to feel that he may talk to me, but I cannot answer him back. It is a wonder to me, after this experience, that the officers of any vessel, excursion steamer, yacht, sail or tug boat, should be willing to leave the shore without this means of communicating with it.'"

What has been remarked will have sufficed to show that in the homing pigeon we have a reliable, easily maintained and readily multiplied messenger for distances within 400 miles in all but extremely bad weather. The birds may be distributed to a system of scattered centres, and thence transported without difficulty by those who desire to avail themselves of their services.

It is not an easy matter in these days of steamboats, railways, telegraphs and telephones to persuade people unaccustomed to the use of pigeons that their employment can be beneficial. Perhaps the task may be most easily approached by some references to what has occurred within a few years in almost every country in Europe.

There—as here—there were neither railways, steamers, telegraphs nor telephones in the year 1800. The first railway engine, only a comparative success, was used at a Welsh colliery in 1804. It was not until 1830 that the first general traffic railway was opened between Liverpool and Manchester; and there was no telegraph service before 1837. Preceding those days messenger pigeons were scarcely heard of. They had been used, but only exceptionally. The London Stock Exchange employed them between London and Paris. Newspaper and betting men used pigeons, and there were races in Belgium. But, as said before, while Europe was without railways and telegraphs, messenger pigeons were not generally heard of. Since 1830 the face of Europe has become a network of railways and telegraph lines. It is desired to bring forcibly under the notice of those who consider that railways and telegraphs entirely dispense with the utility of pigeons, that within the last fifty years, while railways and telegraphs have been extending and multiplying beyond what would have been considered sane expectation in Europe, it may be said that pigeon service took its birth there, and has grown to proportions that cannot fail to excite wonder. In France, in Germany, in Austria, Italy, Russia, Spain and Portugal, the governments now maintain numerous large pigeon service establishments. Four of these countries employ the birds in connection with the defence of their coasts; all of them include pigeon service as important departments of military organization; and all of them, with Denmark and Belgium added, encourage the civil population to maintain lofts.

Belgium—the cradle of homing bird sport—is peopled, it might almost be said, by loft-keepers. In 1885 it had over

1,000 pigeon associations. Yet there in the midst of universal spontaneous action amongst the people, the Government extends encouragement to breeders and trainers by awarding liberal prizes for competition, and by affording special facilities with regard to transport over the railways.

The Secretary of the London Amateur Pigeon Society notes, that in seven provinces in Belgium there are records for 1873 of 1,045 races, receiving 22,656 prizes ; 1874, 1,225 races, receiving 27,494 prizes. From only 12 places, and during the short period of only 35 days in 1874, 7,787 birds were started, the maximum length of course being 545 miles, and the average length 330⅙ miles. In four races in 1875, an average of 1,654 birds started in each race for a mean distance of 246½ miles.

More than 1,500 races are held annually in competition for 900,000 francs in prizes.

The *Century Magazine* relates that at Ixelles, one of the most enthusiastic centres of sport—a national sport in which even children and ladies may take part—a company of militia was at drill early in the morning, to be free at the time the birds liberated in the races of the day should arrive. All went well until the cloud of returning birds appeared on the horizon, when there was an instant uneasiness in the ranks ; then, as if with one impulse, the company broke, and rushed at full speed to their lofts in the town. The officer, having his back towards the birds, was speechless with amazement, until he saw the cause, when he too joined in the stampede, regardless of his accoutrements. The *Morning Press*, in comment, hoped "if this should reach the ears of the authorities, they would recognize the exigency of the occasion, and be lenient."

Russia began pigeon establishments in 1874, at Warsaw, Moscow, and Kieff. Now, in small Poland alone the Government maintains the following lofts :—

Brest Litevski	1,000	birds.
Warsaw	750	"
Ivangarod	500	"
Nova Georgiensk	500	"
Louminetz	250	"

At an annual cost of $3,742,20.

The staff superintending these consists of: 1 Lieutenant-Colonel, 4 Subaltern Officers, 12 Trainers, 24 Servants.

Half a bushel of grain is allowed daily for every 100 birds.

The Russian vote for pigeon service is $10,000 annually.

Successful experiments were made in grand manœuvres of the Russian Army in using pigeons to keep up communication between a detached turning force and the main body. On such occasions telegraphs would be extremely exposed or might be impracticable.

Russian cavalry scouting parties will probably be supplied with birds.

A few years ago three millions of pigeons were taken into France in the course of one season for training, from Germany and Belgium.

The German Government in 1885 had nine military lofts. Now it has lofts at Strasbourg, 600 birds, Metz, 600 birds, Wurtzburg, Mayence, Cologne, Wilhelmshaven, Kiel, Dantzig, Tönning, Schwetzinger near Manheim, Thorn, 1,100 birds, Posen, etc. The whole of the German frontier is connected by pigeon post with the interior and army headquarters. The whole of its northern coast is studded with pigeon stations under the control of the Minister of Marine.

Experiments have proved that pigeons bred on board ship have no difficulty in recognizing their own vessels amongst a number of others.

An ordinary German loft has 200 birds. In 1883-4 the German vote on this account and visual signalling was $8,500.

The German pigeon service is now the most extensive and complete in Europe.

There are 350 private pigeon societies in the country. Of these many train in directions indicated by their War Minister. The Emperor gives annually gold medals for competition in races if not less than 248½ miles; the Minister of War and of Agriculture also grant prizes.

In Austria the first private loft was established in 1873. The Government began work in 1875 at Komorn, and then

in 1882, at Cracow. Up till lately Austria had chiefly directed attention to pigeon service for mountainous districts where military telegraphs could not be laid with sufficient rapidity, and visual signalling is constantly obstructed by intervening elevations.

In Italy, the military pigeon system is extensive. The coast lofts train from seaward with a view to cruiser service.

During the squadron manœuvres pigeon reports had been received many days in advance of advices sent at the same time by despatch boat.

Italy has, moreover, connected Massowah and Assab in Africa by pigeons.

The twelve principal Government lofts in continental Italy are controlled by the Engineer in territorial command at Rome.

In Portugal there are Government pigeon stations at Lisbon, Oporto, Setubal, Tameas, Vedras, Novas, Elvas and Mafra.

In Spain there are coast-guard pigeon stations to receive messages from cruisers intercepting enemies' vessels and to check smuggling.

In Denmark the War Office grants prizes for competition amongst private loft owners who are very numerous.

France has taken the subject up thoroughly. In 1885 France is said to have had 75,000 trained birds in her postal service. Every one of her great fortresses has now about 400 birds, the Engineering Corps superintending their maintenance and training.

The different pigeon societies, of which there are not fewer than 300 in the country, are subject to military authority and requisition. They are required to train their birds in directions conducive to military ends. At periodical contests the Government awards Sèvres vases, medals, diplomas and various other distinctions. At the instance of the Government societies' birds are carried at half ordinary fares, and empty hampers are returned free of charge. Besides the large societies there are small clubs, and individual loft owners—all of whom have to make annual census returns of their birds.

The Colombophile Society at Paris has a loft of 1,500 pairs of birds, and supplies fortresses.

In 1885 France had eight military pigeon stations—Paris with its central loft at Mont Valerien, Vincennes, Marseilles, Perpignan, Lille, Verdun, Toul and Belfort—100,000 francs being appropriated for these.

Now her inland system is complete, a recent article in a French military paper remarking: "In a word, all dispositions are made, so that when war breaks out, the service of messenger pigeons will not have to be improvised as in 1870. An exchange of correspondence between the central authority, the governors of fortresses and intrenched camps is insured."

The United States took the question up in 1888, and the Army Signal Office established a loft on Key West Island, aiming amongst other objects, at communicating between cruisers in the neighbouring seas and the mainland. Another loft was established on board the *Newhampshire* at Newport, Rhode Island.

Early last year it was reported that from Key West birds had already been trained to bring messages from any easterly direction 100 miles seaward.

It is now time to submit to those who argue that railways and telegraphs make it unreasonable to promote the establishment of an organized system of pigeon lofts throughout the country—and to others who take no interest in the matter because it has no detachable coupons—it is time to submit to such that they should reconsider their opinions, for it has been shown that during the last fifty years, over the continent of Europe—not the least intelligent and not the least experienced quarter of the world—there has spread an amazing system of railways and telegraph lines, and with these has developed the most wonderful use of messenger pigeon service. It has been shown that this has been arrived at through unanimity of opinion amongst the vast majority and most influential of technical experts in national defence, and with the assent and concurrence of the leading statesmen in Europe

and the United States, who are not any of them ignorant of the uses to which railways and telegraphs are applicable.

Is more needed to prove that our feathered messengers should not be neglected by those of us wishing to strengthen our country's position?

The patriotism of every Canadian will accord ready approval and praise to the motives and aims of the enlightened governments and officials who have been endeavouring to increase their national security. Are the approval and the praise to be accorded, but the example disregarded?

Men whose thoughts have dwelt on the circumstances of warfare need no reminder of the importance of keeping control over supplementary and alternative methods for rapidly transmitting intelligence. A word, however, may not be out of place here to others who have not considered the character of the slender thread which conveys thought and even voice to unlimited distances, with almost unmeasurable rapidity and nearly uninterrupted regularity. So well nigh perfect is its action that many have ceased to reflect that it has its weak points.

In warfare it is not solely reliable. The message it carries may be drawn off at any point in its length. False and misleading information may be designedly passed through it from any point at which an expert can get hold of it. Its vitality is at the mercy of the elements. Snow may break it down, wind may throw it over, lightning may shiver its supports. The scout and the secret agent can destroy it when and where they choose.

In the case of an attack, the invader, at the cost of but trifling pre-arrangement, might give many an idle hour to telegraph operators at the very instruments where the safety of their country most needed their whole energies.

By pre-arrangement any wire or any sets of wires might be severed at the instance of the enemy at a given hour if desired. What would be the effect? How would any large and active firm be situated if it found communication between

its manager, heads of departments and clerks suddenly cut off? The normal smooth clockwork movement of the organization would inevitably be replaced by confusion and impending disaster.

How much more numerous are the vital parts in the machinery of national defence, and how much more exposed than those in the detached mechanisms of commerce?

All the details of mobilization, concentration and tactical movements in this country at this moment are dependent upon our telegraph wires. What a slender thread to carry our national safety!

With wires between army headquarters, divisional and brigade headquarters severed, we should be open to attack where the enemy purposely confused our arrangements.

In such a pass it is not too much to say that in organized pigeon service, and in that only, could there be found ground for expectation that the tables might be turned against the enemy. They would keep us informed of his movements, and would maintain our power to transmit orders uninterrupted.

The circumstance which gave a first impetus to military pigeon service was its improvised use at the siege of Paris, in 1870. In the course of a review of an article on messenger pigeons by an Austrian officer, an English military paper thus refers to the subject :—

"On September 2, 1870, the day of the battle of Sedan, one of the most experienced breeders of carrier pigeons in Belgium, M. La Perre de Roo, made the offer to the French war minister, basing it on the assumption that from the information published by English journals, Paris would be shortly completely invested by the Germans, to furnish him with a supply of carrier pigeons for keeping up communication between Paris and the Provinces. His letter was never answered.

"After the appearance of the German army before the capital the Paris association for breeding pigeons—L'Esperance—generously offered to the Government all their carrier

pigeons for aerial postal service, and to conduct the latter. M. Cassier, the president of the association, asked for an audience of General Trochu, but was received by a subordinate who, after hearing the patriotic pigeon breeder, smilingly replied that he, M. Cassier, was the sixty-second person who had bothered him with carrier pigeons, and he hoped he would be the last.

"Meanwhile Paris, to the consternation of the inhabitants and the annoyance of the daily press, which had been constantly trying to prove that the immense city could never be properly invested by the forces at the disposal of the enemy, was cut off completely from the outer world.

"Notwithstanding that there were a great number of carrier pigeons in Paris, not a single bird had been sent out of the capital, so that it seemed entirely impossible to keep up communication with the Provinces.

"In this dilemma the French postmaster-general, M. Rampount, hit upon the ingenious idea of sending off a number of pigeons by balloon. On September 25, at 11 a.m., the balloon—La Ville de Florence—rose amidst the plaudits of an enormous concourse of people, carrying besides the aeronaut, M. Maugin, three carrier pigeons and six cwt. of despatches. The wind carried the balloon westward until it disappeared from the eyes of the Parisians. But, on the same day, at five in the afternoon, two pigeons arrived at their home in Paris. Attached to the tail feathers of each of them was a label with the following words:—'We landed safely at the village of Vernouillet, near Triel, and are on the point of leaving for Tours with the official despatches.'

"The population of Paris, who for the greater part had probably never heard of the capabilities of carrier pigeons, were intoxicated with joy at such success. The newspapers were full of illustrations of this breed of pigeons, and printed most fabulous tales of their performances. Subsequently a balloon was sent off every second or third day; altogether sixty-four balloons were despatched, and from the pigeons

taken, some returned almost regularly to Paris. . . . Many performed the journey from four to six times."

The writer of the article states that seventy-three birds returned with despatches to Paris, and thence argues that only twenty pigeons really did the work.

The "Encyclopædia Britannica" states that fifty-seven was the number which actually did the work.

The bird which repeated the trip six times was named "The Angel of the Siege."

In addition to 156,000 official despatches, over one million private communications were carried by pigeons into Paris.

In French experiments with pigeons for naval use—the first attempt—made at Toulon, was to domesticate the bird on board the *St. Louis*, artillery practice ship. The pigeon house was placed near two seven and a-half inch and two nine and a-half inch guns, firing an average of 600 rounds weekly. The aide-de-camp of the Vice-Admiral Commander-in-Chief at Toulon stated that the experiment to establish communication between a ship at sea and a pigeon loft ashore succeeded perfectly. The converse experiment was not so successful, but was to be repeated. The results, however, proved that the homing bird adapts itself perfectly well to life afloat and breeds there. The pigeon house on the *St. Louis* had an inside capacity of three cubic metres, accommodating eight pairs of birds.

As to the use of pigeons for naval purposes, a sketch by Lieut. Wainwright, U. S. Coast Signal Service of Defence Arrangements, will give a fair general idea of their importance as auxiliaries. Lieut. Wainwright says: "An ideal system of transmitting intelligence coastwise and to seaward during a naval war would be one in which observation stations, connected by telegraph lines, were established at certain intervals along the coast; at each station trained men with the necessary instruments for receiving and sending visual signals; at certain of these stations pigeon lofts for furnishing pigeons to lookout vessels and receiving from them reports, and also for

despatching birds with information to the outside stations of the fleet; also lofts, at such stations as from the position of the telegraph lines, are liable to have their connections interrupted, the birds being used to maintain communication when the lines are cut. All coast lines to be connected with the interior lines whenever practicable, in order to give additional security. The instruments necessary are heliographs, electrographs, semaphores, and at the most important stations captive balloons. By means of observation vessels also, furnished with signal instruments and pigeons, the point towards which the enemy is making would be known, and his progress along the coast followed by observers, so that the defending fleet might meet him, or acting as a flanking fleet, follow up and engage him at the critical moment. If the enemy's fleet break up into detachments the course of each will be known to the admiral commanding the defence, and he can oppose the enemy with similar detachments or keep his fleet together, and overwhelm the smaller bodies with his united force. Thus at a comparatively small cost, the effective strength of the fleet would be greatly increased to the greater security of the defence.

"In times of peace these signal stations could be utilized by the Life Saving Service and Weather Bureau, and for the purpose of sending the usual commercial intelligence.

"As will be seen the system adopted by the French approaches very closely the ideal one."

In Lieut. Wainwright's lucid sketch one cannot fail to be struck by the great importance attached by him to pigeon service.

The writer in the *Royal Engineer Journal* whose reference to the Siege of Paris has been quoted, remarks on the organization of military messenger pigeon posts:—

"If it is to be used as an auxiliary means, whether of offence or defence, it must be organized thoroughly, efficiently and on a large scale. A large fortress or other suitable place in the heart of the country must be selected as the central station,

where the carrier pigeons needed for stocking the pigeon stations of the whole country must be bred. The selection of the stations which are to be connected mutually by carriers, their housing, feeding and tending must be made the subject of careful study. Of course only strategical consideration must be the guiding principles in selecting lines of flight, and the organization of the carrier pigeon post must be left to the general staff.

"Besides breeding pigeons in state columbaries private breeders must receive every encouragement, so that in case of war a large supply of those useful birds may be always obtainable.

"The great military powers of Europe have recognized the importance of this means of intercourse and have made most extensive preparations."

Of the uses to which the bird is put in peace the *Century Magazine*, speaking of the United States, says :—

"In our country of magnificent distances and tardy messengers, pigeons are more largely employed as carriers than is generally known, inasmuch as the service is mainly for individual convenience. Very many business men in cities communicate with home in the suburbs by pigeon post, or use the birds between office and factory. Farmers use them as messengers through the neighbourhood and from the post-office and the town. Country physicians often have an apartment prepared for the birds in their conveyance and carry the birds on their rounds as regularly as they carry their instruments and their bottles, using them to bring word later on from their patients and to send word home when there is need. And even New York brokers promise to follow the example of Mr. A. De Cordova, who says :—'I use my birds to bring the reports from Wall Street to me at Chetolah, near North Branch.' Mr. R. D. Hume, of Fruit Vale, California, claims to use pigeons with complete success between his factories some three hundred miles to the north. Years ago certain of the Wells Fargo agents in the mountains of Nevada used pigeons

to bring them news from the nearest station the same day that by the regular means would not have reached them until the third day. There are many prominent men and capitalists in the vicinity of New York to-day who owe their prosperity to the foundation laid years ago through advices conveyed by pigeons in advance of the mail by stage. . . . Very many of the merchant marine, especially in European waters, have pigeons on board for use in communicating with the vessel from the small boats away from them, or from the shore. The birds, it is said, never mistake another vessel for their own at the dock or in the harbour. It has been remarked of several flights that the birds in exercising, when far out of sight of land, will go away for hours at a time, and upon their return will have dried mud on their feet and legs, shewing them to have been ashore."

The passage from land to land across the Atlantic by the St. Lawrence is about 1,800 miles. Assuming that a vessel on this line has a good Irish bird and a good Canadian bird on board—then for only 900 miles will she be beyond communicating distance from the mainland.

The Newfoundland fishermen and vessels engaged in the coasting trade and in navigating the inland lakes, explorers, surveying parties, and sportsmen in remote districts, would frequently avail themselves of the services of these birds were there lofts whence they might readily obtain them when required for use.

Who can estimate the mitigation of anxiety that pigeons might have afforded to the passengers of the *City of Paris* in her recent accident? At what a slight cost this relief might have been supplied!

Why should not all transatlantic steamers carry birds with them to announce the approach to either coast?

The *Illustrated Daily Graphic* in England has its pigeon loft. Its birds brought to it a succession of sketches taken on board a steam launch following the course of the Oxford and Cambridge race; and from the train in which the Prince of

Wales travelled to open the Forth Bridge its pigeons brought pictures of incidents *en route*.

Newspaper men here might receive early photographic copies of European news two or three days in advance of the arrival of the mails by vessels liberating messenger pigeons. The eastern Canadian press might exchange news in a similar way with the western press, and Canada generally exchange with the United States. With well-tested, reliable birds, it might even be possible to transmit official despatches between the British Embassy at Washington and Ottawa—more rapidly far than by mail.

It is earnestly hoped th.. not a few of those who read this article will consider it a citizen's duty to encourage the breeding and training of messenger pigeons as a means of furnishing abundance of innocent amusement to young and old alike, as useful helps in domestic and personal affairs, as servants of the press, as aids in the transaction of business, as assistants in commerce, as invaluable friends of the merchantile marine, and as indispensable auxiliaries to the navy and army in the time of our country's need.

D. R. CAMERON.